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(71) Applicant (for all designated States except US): **THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA** [US/US]; 3160 Chestnut Street, Suite 200, Philadelphia, PA 19104-6283 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HERRMANN, Howard, C.** [US/US]; 732 Great Springs Road, Bryn Mawr, PA 19010 (US). **WOO, Y., Joseph** [US/US]; 2118 Basswood Drive, Lafayette Hill, PA 19444 (US).

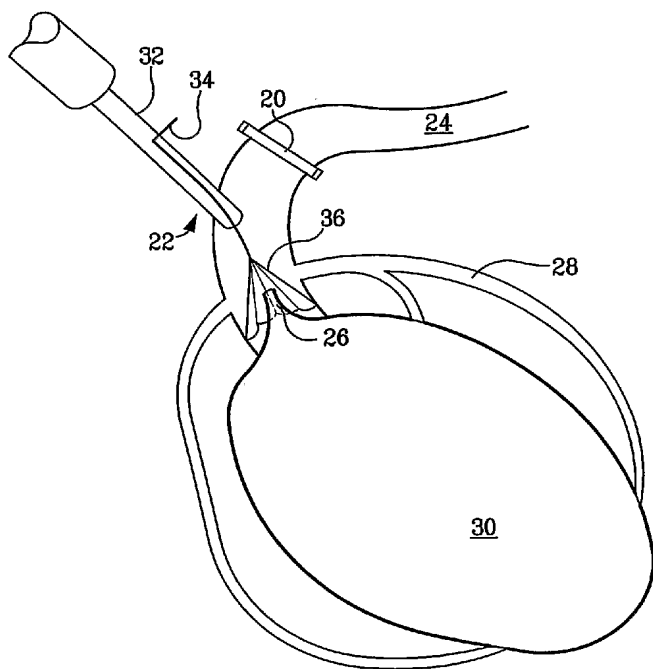
(74) Agents: **CALDWELL, John, W.** et al.; Woodcock Washburn LLP, One Liberty Place, 46th Floor, Philadelphia, PA 19103 (US).

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(54) Title: DEVICE FOR FACILITATING CARDIOPLEGIA DELIVERY IN PATIENTS WITH AORTIC INSUFFICIENCY



(57) Abstract: A method and device that addresses the problem of an incompetent aortic valve by using a simple cardioplegia catheter that can deliver cardioplegia solution to the coronary arteries through the usual aortic cannulation site even in the presence of aortic valve incompetence. The device includes a cardioplegia cannula with an additional lumen containing a nitinol wire inside it that allows advancement of a folded nitinol umbrella with a non-porous membrane or a compressed nitinol ring that covers the aortic valve when opened. During installation, after puncture of the aorta by the coaxial needle and removal of the coaxial needle but before installation of the cardioplegia solution through the central lumen of the catheter, the nitinol umbrella (in folded position) or nitinol ring (in compressed position) is advanced through the second lumen into the aorta just above the aortic valve. The nitinol umbrella is unfolded using the nitinol wire to expose the inverted umbrella configuration with attached membrane and is then advanced as a unit with the cardioplegia catheter until the nitinol umbrella covers the aortic valve at its deployment position. The nitinol ring, on the other hand, springs open when it emerges from the distal end of the cardioplegia catheter. During

installation of the cardioplegia solution (after aortic cross clamping), the solution is trapped above the umbrella or ring, below the clamp, and travels down the coronary arteries regardless of whether the aortic valve is closed, open, normal, or incompetent.

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